

REMARKS

This is in response to the non-final Office Action dated October 1, 2004, and for which a two-month extension is hereby recorded. The Office Action rejected claims 1-35 under 35 U.S.C. 102(e) as being anticipated by Malkin *et al.*, U.S. patent number 6,614,474. The present Amendment amends independent claims 1, 13, and 25 and adds new claims 36-64. For the reasons given below, it is respectfully submitted that all of the currently pending claims are allowable and that a rejection over Malkin *et al.* is not well founded.

Previously Pending Claims

As shown there in Figure 1, with more detail shown in the subsequent figures and in the corresponding portions of the specification, Malkin *et al.* presents an apparatus for taking video data, downscaling it in both the horizontal and vertical directions, and then sharpening the resultant data. This takes a first field of video, in the example of 640x480 pixels, and produces a second field, in the example of 352x288 pixels, in scaler 200. It is this new field of video data, that has scaled down both horizontally and vertically, which is then sharpened up in Sharpening Filter 300. The output of Sharpening Filter 300 is again the scaled down, second field of data (as emphasized by the 352x288 output), and the Edge Detector/Sharpener of Sharpening Filter 300 is used to clean the results of the Scaler 200.

Thus, the device of Malkin *et al.* downscales a first field of video in *both* the horizontal *and* vertical directions, with the result being a new, second field of data. It is then the pixels of this *second* field that are subjected to the Edge Detector/Sharpener of Sharpening Filter 300; consequently, the edge detection and determination of Sharpening Filter 300 is not for a field pixel of the original, first field of pixels, but rather for the pixels of this second, scaled down field. This is believed to be quite distinct from the aspects of the present invention to which the pending claims are drawn.

More specifically, as described beginning at paragraph [0020] and other portions of the present application, a principle aspect of the present invention downscales field pixels in only the horizontal direction; that is, it downscales the pixels of a first field of pixels of video data in the horizontal direction, but while maintaining the scaling in vertical direction. This is done to more accurately detect the slope of pixels in *the same first field of pixels*; that is, a particular field of video data is downscaled, but only in the horizontal direction, to more accurately determine

slopes within the *same* field of data. This is respectfully submitted to be quite different from what is found in Malkin *et al.* where a field of data is downsampled in both the horizontal *and* vertical directions to produce a new field of pixels and then the edges are detected for the pixels in this second, new field of data.

This difference is reflected in the pending claims. Although believed allowable in their original form, independent claims 1, 13, and 25 have been amended in order to more clearly delineate the distinctions from the prior art in general and Malkin *et al.* in particular. Claim 1, in its present form, reads:

1. A method for determining the slope of a first field pixel from a first field of a video signal, the method comprising:
 downsampling in the horizontal direction while maintaining the scaling in the vertical direction one or more sets of field pixels from said first field to generate one or more downsampled field pixels; and
 detecting the slope of the first field pixel using the one or more downsampled field pixels.

The added emphasis, both underlining and italics in the above and in following sentences, has been added. As shown by the italics, the method of claim 1 involves “*downsampling in the horizontal direction while maintaining the scaling in the vertical direction* one or more sets of field pixels”; this is contrary to Malkin *et al.* whose teaching is directed at scaling the whole field in both the horizontal and vertical direction to produce a new, rescaled field. As shown by the underlined portions, the method of claim 1 involves determining a “*first field pixel from a first field of a video signal*” by “downsampling ... sets of field pixels *from said first field*” and “detecting the slope of the *first field pixel*”; that is, the slope is detected for the first pixel *from the same field* as that from which the pixels are downsampled, rather than in Malkin *et al.* where slope that is being detected is that of a new pixel in the second, rescaled field.

For any of the above reasons, it is respectfully submitted that claim 1 is allowable over the prior art in general and Malkin *et al.* in particular. Claims 13 and 25 contain similar limitations are believed allowable for much the same reasons. Consequently, it respectfully submitted that claims 1-35 are allowable and that a rejection under 35 U.S.C. 102(e) as being anticipated by Malkin *et al.* is not well founded and should be withdrawn.

New Claims

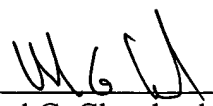
New claims 36-64 are drawn to another aspect of the present invention, namely the use of the edge detection techniques described in claims 1-35 for the interpolation of pixels; in particular, a particular application of the present invention is to interpolate pixels to produce a progressive signal from an interlaced signal. This aspect of the present invention is, in many ways, the opposite of what is taught in Malkin *et al.*: there, the process is directed to reducing the number of pixels and then cleaning up problems with edges that result from that; in this aspect of the present invention, the concern is sorting out the edges on interpolating pixels, such as when deinterlacing to increase the number of pixels displayed in the same frame from what is started with.

New independent claims 39 and 52 are, respectively, a method and a device claim drawn to this aspect of the present invention. New dependent claims 36-38, 40, and 53 specify that the video signal from which the interpolation is performed is an interlaced signal. The remaining dependent claims are the same as the previously pending dependent claims, but have either claim 39 or 52 as their base claim instead of claim 1 or 13.

Conclusion

Accordingly, it is believed that this application is now in condition for allowance and an early indication of its allowance is solicited. However, if the Examiner has any further matters that need to be resolved, a telephone call to the undersigned would be appreciated.

Respectfully submitted,



Michael G. Cleveland
Reg. No. 46,030

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PARSONS HSUE & DE RUNTZ LLP
655 Montgomery Street, Suite 1800
San Francisco, CA 94111
(415) 318-1160 (main)
(415) 318-1163 (direct)
(415) 693-0194 (fax)